IN THE UNITED STATES DISTRICT COURT FOR THE

NORTHERN DISTRICT OF OKLAHOMA

W. A. DREW EDMONDSON, in his capacity as ATTORNEY GENERAL OF THE STATE OF OKLAHOMA and OKLAHOMA SECRETARY OF THE ENVIRONMENT C. MILES TOLBERT, in his capacity as the TRUSTEE FOR NATURAL RESOURCES FOR THE STATE OF OKLAHOMA, Plaintiff, vs. TYSON FOODS, INC., et al, Defendants.	4:05-CV-00329-TCK-SAJ

- -

VOLUME I OF THE VIDEOTAPED

DEPOSITION OF ROGER OLSEN, PhD, produced as a witness on behalf of the Defendants in the above styled and numbered cause, taken on the 10th day of September, 2008, in the City of Tulsa, County of Tulsa, State of Oklahoma, before me, Lisa A. Steinmeyer, a Certified Shorthand Reporter, duly certified under and by virtue of the laws of the State of Oklahoma.

(Whereupon, the deposition began at 9:03 a.m.)

VIDEOGRAPHER: We are now on the Record for the deposition of Dr. Roger Olsen. Today is September 10th, 2008. The time is 9:03 a.m. Would counsel please identify themselves for the Record? 09:03AM

MR. PAGE: David Page for the State of Oklahoma.

MR. GEORGE: Robert George for the Tyson defendants. 09:03AM

MR. McDANIEL: Scott McDaniel for Peterson Farms, Inc.

MR. GRAVES: James Graves for George's, Inc., and George's Farms, Inc.

MS. HILL: Theresa Hill for Cargill, Inc., and Cargill Turkey Production, LLC. 09:03AM

VIDEOGRAPHER: And on the phone?

MS. GRIFFIN: Jennifer Griffin for Willow Brook Foods.

MR. SANDERS: Bob Sanders for the Cal-Maine defendants. 09:03AM

MR. BURNS: Bryan Burns for the Tyson defendants.

MS. BRONSON: Vicki Bronson for Simmons Foods. 09:03AM

VIDEOGRAPHER: Thank you. The witness may be sworn in.

ROGER OLSEN, PhD

having first been duly sworn to testify the truth, the whole truth and nothing but the truth, testified as follows:

DIRECT EXAMINATION

BY MR. GEORGE:

Q Dr. Olsen, it's good to see you again. Are you still employed with Camp, Dresser & McKee? 09:03AM

A Yes.

Q During your deposition in January of this year you testified that the South Carolina law firm of Motley Rice was paying for CDM's work in this case. Is that still true? 09:04AM

A That's correct.

Q Has Attorney General Drew Edmondson or the Oklahoma Secretary of the Environment paid CDM for any work that it's performed in this case?

A No. 09:04AM

Q Has the State of Oklahoma paid CDM for any work that it's performed in this case?

A No.

Q How much has CDM been paid to date, if you could estimate for me, for its work in this case, 09:04AM

the land application of poultry litter?
A Yes, I do, and Bert Fisher actually reviewed all these locations and verified they were representative of runoff from land applied fields.
Q The second half of the chart on the right-hand side is under the heading cattle; do you see that? 10:13AM
A Yes.
Q And, again, there's a reference to edge of field samples; do you see that?
A Yes. 10:13AM
Q And can you provide the court with a description of what the cattle edge of field samples are and are intended to represent?
A Yeah. That's actually a misnomer, edge of field, in my opinion. Those were collected this spring. We were out -- CDM and Lithochimeia were sampling actual cow manure samples, and it was raining, and so after that rainstorm, my understanding that two samples were collected on one of the fields from -- one was from a ponded water 10:13AM 10:14AM near the road and another one was from runoff a little bit further up on the field, so they weren't our classical edge of field runoff as the poultry edge of field. They were kind of opportunistic samples from a field that had cow manure on it. 10:14AM

Q Okay. Were they -- I'm sorry, strike that. Was the intent of these samples under cattle edge of field to capture runoff that would be representative of a pasture where cattle had been grazed?

A That was the intent, you know, but after looking at actually what was done and the location of discrete cow pies on field, that's a pretty difficult thing to do. To get a sample that was representative of runoff and document that there wasn't anything else but cows, that's extremely difficult. 10:14AM 10:15AM

Q Well, did you try to document that?

A Yes, we did.

Q Okay, and have you reviewed the field notes associated with this particular sampling event? 10:15AM

A Yes.

Q And have you reviewed the photographs taken on site?

A No, I haven't done that. I was going to do that but didn't get around to doing that yet. 10:15AM

Q Whose property were these cattle edge of field samples taken from?

A This is Mr. Fife's (sic) property.

Q Do you know who Mr. Fite is?

A Yes. 10:15AM

Q Who is he?
A I think he works for the -- what's the organization?
Q Is he the administrator of the Oklahoma Scenic Rivers Commission? 10:15AM
A Yeah, yeah, administrator or executive director or something, position like that, right.
Q And do you recall from your review of the field notes associated with the cattle edge of field sampling that Mr. Fite reported and it was recorded 10:16AM in the notes that no poultry litter had ever been applied on those pastures?
A That he was aware of.
Q Well, he was the owner of the property; right?
A Yes, but I don't remember him associating a 10:16AM time frame with that or anything. So I don't know how long he's owned it or what happened before that, but maybe he's owned it, you know, for a long period of time.
Q Do you have any evidence that poultry litter 10:16AM was ever applied on that property?
A No, I don't but, again, the samples were collected in an area that has other fields in it. One sample is very near a road where dust could have blown off trucks, which we've seen, or dust could 10:16AM

analysis in this case?
A Yes, I do.
Q Okay. Do you agree, Dr. Olsen, that the scientific method -- you're familiar with the scientific method; correct? 10:26AM
A Yes, sir.
Q Okay. Do you agree that the scientific method required the Motley Rice experts to be open to the conclusion that sources other than poultry were responsible for the contamination alleged in this 10:26AM case?
A Yes.
Q Okay, and do you agree that to be scientifically defensible, it is important that CDM's sampling approach in this case be set up to 10:26AM capture sufficient data to evaluate contamination from sources other than poultry litter?
A Yes.
Q Okay, and you collected 89 edge of field samples in areas where you believed you would find 10:26AM the impact of poultry waste; correct?
A That's both poultry and cattle waste. As we know, there's cattle on all those fields and so those were collected, any cattle waste that ran off of that field, too. 10:27AM

component analysis work in this case and your opinions about the source of contamination in particular samples, do I understand correctly that you've concluded that all samples with a Principal Component 1 score of greater than 1.3 are in your opinion impacted predominantly by poultry litter?

A There may be a few minor exceptions in there. I'd have to go review it. There's some question about the CP samples that we collected this morning, so, you know, that needs further analysis. So there's -- and a few samples I couldn't verify locations of so I kind of excluded them, so there's a very, very few, but generally that statement is true. 05:04PM

Q Well, Dr. Olsen, in your report you said that a Principal Component 1 score of 1.3 or greater is consistent with and supports your opinion that that sample reflects contamination from poultry litter; is that right? 05:05PM

A Yeah, and I need to clarify that a little bit more. There were some -- in that particular count, I included inadvertently some of the wastewater treatment plant discharges, so I need to take that out of those percentages and analysis. 05:05PM

Q I didn't really ask about percentages so I'm 05:05PM

confused as to exactly what you are talking about. What are you talking about?

A There were three wastewater treatment samples that were scored and typically those had a principal component score of above 1.3, and I would say that those probably weren't contaminated by poultry. 05:05PM

Q Which three wastewater treatment plant facilities are you referring to or samples?

A There was one from Siloam Springs, I think from Rogers -- you want me to look that up for sure? 05:06PM

Q Sure.

A Siloam Springs.

Q What are you referring to, Dr. Olsen?

A Oh. Table 6.11-11.

Q 6.11-11? 05:07PM

A Yes.

Q Okay. Now, I don't have a Table 6-11.

A 6.11-11?

Q I don't have that.

A Largest PC2 scores and locations. 05:07PM

Q I missed a copy in my set. Can I look off of yours?

A Sure.

Q All right. Which wastewater treatment plant samples are you referring to? 05:07PM

IN THE UNITED STATES DISTRICT COURT FOR THE

NORTHERN DISTRICT OF OKLAHOMA

W. A. DREW EDMONDSON, in his capacity as ATTORNEY GENERAL OF THE STATE OF OKLAHOMA and OKLAHOMA SECRETARY OF THE ENVIRONMENT C. MILES TOLBERT, in his capacity as the TRUSTEE FOR NATURAL RESOURCES FOR THE STATE OF OKLAHOMA,	)	
Plaintiff,	)	
vs.	)	4:05-CV-00329-TCK-SAJ
TYSON FOODS, INC., et al,	)	
Defendants.	)	

- -

VOLUME II OF THE VIDEOTAPED

DEPOSITION OF ROGER OLSEN, PhD, produced as a witness on behalf of the Defendants in the above styled and numbered cause, taken on the 11th day of September, 2008, in the City of Tulsa, County of Tulsa, State of Oklahoma, before me, Lisa A. Steinmeyer, a Certified Shorthand Reporter, duly certified under and by virtue of the laws of the State of Oklahoma.

(Whereupon, the deposition began at 8:32 a.m.)

VIDEOGRAPHER: We are now on the Record for Volume II of the deposition of Roger Olsen. Today is September 11th, 2008. The time is 8:32 a.m. 08:32AM
Would counsel please identify themselves for the Record?

MR. PAGE: David Page representing the State of Oklahoma.

MR. GEORGE: Robert George representing the 08:32AM
Tyson defendants.

MS. SOUTHERLAND: Leslie Southerland for Cargill.

VIDEOGRAPHER: Thank you. The witness may be -- may continue.

ROGER OLSEN, PhD

having first been duly sworn to testify the truth, the whole truth and nothing but the truth, testified as follows:

CONTINUED DIRECT EXAMINATION

BY MR. GEORGE:

Q Dr. Olsen, good morning. Good to see you again today. Dr. Olsen, who is Rick Chappell -- I'm sorry. Strike that. What role did Rick Chappell have in the PCA work that underlies the opinions 08:32AM

Q -- you indicated that part of the bases for your deciding the 1.3 criteria for Principal Component 1 --

A Yes.

Q -- was based upon a review of high flow samples from these subbasins; do you remember that? 09:06AM

A That's correct.

Q Okay. Tell me again how that worked and in particular what information you were looking at regarding poultry house density in those basins. 09:06AM

A Well, if you remember in the report, we specifically set up the high flow stations on a stratified basis, so we had -- tried to find stations with very low impacts, some higher -- it was a quintile-type setup to very high, so that we would collect data across the whole range of concentrations. 09:06AM

Q Okay. Where did you get the poultry house density data that you used to set up that stratified program? 09:07AM

A That's what we covered yesterday in that section.

Q From Bert Fisher?

A Yes.

Q Okay, all right. So part of your analysis 09:07AM

that arrived at this 1.3 criteria for Principal Component 1 was, if I understand it, you tell me if I don't, based upon a review of principal component scores in basins that had been identified as low poultry house density; is that right? 09:07AM

A Yes, and then looking at the concentrations and seeing that they were very low and they had very low scores.

Q Dr. Olsen, did you actually get the poultry house density map out and look at particular and 09:07AM plotted values for your Principal Component 1 score?

A Get out what map?

Q Let's refer to -- let me find it real quick. Figure 2.5-1 looks like this, Dr. Olsen.

A Okay. Got it. 09:09AM

Q Okay. You recognize Figure 2.5-1?

A Yes. Versions of this I've seen, yes.

Q Okay, and is this a representation of the poultry house density data collected by Dr. Fisher that you're referring to? 09:10AM

A Yes.

Q Okay, and so when you were talking about, Dr. Olsen, your spatial analysis, would this type of information be part of what you used in that spatial analysis? I'm trying to understand what you meant. 09:10AM

A No, I didn't specifically go in and look at this. I did specifically look at the two or three basins with very low chicken house density to see their scores.

Q Okay, but the underlying density data that you were looking at would be the source for what is presented in Figure 2.5-1? 09:10AM

A Well, as I described in the text, there were a variety of these produced at different stages in the project, and I don't know for sure which one this represents without looking. 09:11AM

Q Okay.

A And the final -- on the final PCA analysis, I did a spatial analysis, you know, point by point, but I didn't go back and look at this. I did specifically for the very low scores because I wanted to make sure I had a good cutoff. So I looked at like High Flow Station 30. That was specifically selected as a low density basin, and so I wanted to see what those scores came out. 09:11AM

Q And when you say you looked -- you actually looked at a map somehow; is that right?

A Well, I knew where High Flow Station 30 was and I knew what the density was. In fact, we had a table of all the high flow stations with the 09:11AM

density, so I didn't need to look at a map. I looked at, you know, a table that had the high flow, the numbers on them --

Q Okay, but --

A -- for chicken house density, so -- you know, in the ones we selected because the high flow stations were in specific basins, and those numbers are reported in here, the chicken house densities in those basins. 09:11AM

Q Okay, and were you looking to confirm that you found Principal Component 1 scores in subbasins that had reported low poultry house density or no poultry house density? 09:12AM

A Was I looking for PC1 scores in those, quote, internal references or -- yes, look I looked at all those, yes. 09:12AM

Q Okay. So part of your check on this was looking at the poultry house density data, and if you found an anomaly in terms of a high Principal Component 1 score in a basin that had low poultry house density, that would cause you to want to investigate further; is that the point of the exercise? 09:12AM

A Well, the point of the exercise was trying to determine that cutoff and how conservative I could 09:12AM

be because we know that almost everything is impacted to some degree, but I wanted to be conservative and had these minimal impact basins, so most of the samples are below that 1.3 for the low chicken house density basins, and that's described in here. 09:13AM

Q Dr. Olsen, did you believe that the poultry house density data provided by Dr. Fisher was sufficiently reliable that it could be used to evaluate the results of your principal component analysis? 09:13AM

A I don't know if I used it to evaluate the principal component analysis. It was a confirmation that those basins that had lower chicken house densities had lower concentrations and lower scores. So I guess if you say that, I used that information in a general way to confirm the PCA, that those should have had low scores. There were some that had high scores that we thought were -- or high concentrations that we thought were low chicken house densities and, yes, we did go investigate that, and we found spreading in the basin that hadn't been identified on the aerial, on the aerial photograph. If I remember right, that's High Flow Station 14. So it was supposedly a reference but it 09:14AM 09:14AM

had high concentrations, high feces scores, and doing some actual field investigation, there was actual spreading very near the river that had been missed in the aerial photo, and, again, that's some of the problem because this is based on chicken house density but, you know, as you've indicated already, we don't know where all the spreading is. So we're using chicken house density as a rough surrogate for spreading, but in all cases it wasn't perfect. 09:14AM 09:15AM

Q Okay, but you used it as the initial check, if you will, in your evaluation, the poultry house density?

A Used it as one of the checks.

Q Okay, and I assume -- this is not a good question, Dr. Olsen. I assume you wouldn't have used it if you didn't believe that data had some reliability to it; is that right? 09:15AM

A Yeah. It's generally reliable, except, you know, the chemistry is a final analysis and, you know, if it points out anomalies, we go look at it, yeah. 09:15AM

Q Turn to Figure 6.11-23. This is what I affectionately refer to as your red dot-green dot map. 09:15AM

show as red dots the poultry impacted locations, you colored the location of the cow pasture edge of field samples red, didn't you?

A Yes, because they reflect some poultry contamination. 09:26AM

Q Okay. Well --

A In my opinion.

Q Where is that red dot on this map?

A I think they're right here.

Q Can you draw a circle around it, please, on your copy? 09:26AM

A (Witness complied).

Q And can you now draw an X through it, please?

A Sure.

Q Okay. Go to Figure 6.11-18C. 09:26AM

A Okay.

Q Are the sample locations shown in Figure 6.11-18C that are above 1.3 on Principal Component 1 but also in the circle of the wastewater treatment plant dominated impact area plotted red on your map? 09:27AM

A Yes.

Q Okay, and how many -- well, let me ask, are all of the dots that are shown in this wastewater treatment plant dominant impact on your map as red?

A Yes, except the -- shouldn't have -- as I 09:27AM

said, the three wastewater treatment plants shouldn't have been plotted as red.

Q Okay, but all the others, there are a whole lot more than the three samples that you've identified as showing the predominantly wastewater treatment impact; correct? 09:27AM

A Yes.

Q Okay. In fact, if I look at your Figure 6.11-18C, roughly I'd say there are 25 samples in that circle; is that right? 09:28AM

A Yeah, if you count them, just approximately.

Q Okay. Are all 25 of those samples that you have circled as wastewater treatment dominantly impacted shown as a red dot on Figure 6.11-23?

MR. PAGE: Object to the form. 09:28AM

A Except the ones I've already noted.

Q Well, but the ones you've already noted are also shown as a red dot, aren't they?

A Yes, yes, yes, they are. In my opinion they still show some poultry waste impact, although it isn't the dominant impact. 09:28AM

Q Right. It's not the dominant impact because they're outside the dominant poultry waste circle that you've drawn; right?

A That's right, but they still show some impact. 09:28AM

think related to the metals being mobilized with the organic carbon and staying in solution and not being attenuated.

So your question was how many of these are conservative. Potassium, TS, two, magnesium, three, most of the phosphorus, four, five, six, a little attenuation there. So in my opinion, there's five or six that are very conservative but not -- you can never say anything is an exact conservative element, and the rest of them, you know, have some attenuation but in my opinion not to affect the overall evaluation of their transport throughout the basin. 05:29PM 05:29PM

Q In fact, your principal component analysis assumes that they're all conservative, doesn't it? 05:29PM

A No.

Q Specifically how did you account for the differences in fate and transport via surface water pathways as compared, for instance, to groundwater pathways? 05:30PM

A I didn't have to in the principal component analysis. It gives me a chemical analysis at a particular spot, and if I still see the constituents and it has a particular score, then it's impacted. It can be certainly, as we talked about this 05:30PM

morning, diluted. It can be attenuated, but as long as they're still there, it doesn't matter. So it's a conservative, maybe considered conservative, but we're looking at individual samples and individual locations and see what we have there, so you don't have to account for the fate and transport. 05:30PM

Q Now, from what I've heard, your testimony primarily with Mr. George, to look at how this -- your poultry fingerprint primarily described on Figure 6.11-18C where you've drawn the two areas, you have cattle, edge of field samples that show up -- I know they're not on this chart but they show up within the poultry signature. You've got water, residence water wells that show up in the sewage signature. You've got Tahlequah samples where there's no poultry that show up as poultry impacted. Did it ever occur to you, Dr. Olsen, that the problem is not in the watershed, it is that your fingerprinting methodology is flawed? 05:31PM 05:31PM

A Those are anomalies that we try to explain, and there's always going to be some minor anomalies in my opinion. Those are minor for the hundreds and hundreds of samples that we have in the whole analysis. So I don't think the analysis is flawed at all. 05:32PM 05:32PM